

## BLIND NARROW-BAND INTERFERENCE CANCELLER USING A PREDICTION ERROR METHOD

### ABSTRACT

Blind narrow-band interference cancellation apparatus and methods that implement an algorithm that adapts an antenna array or a finite impulse response equalizer, or a combination thereof, to cancel narrow-band interference in a communication signal. The apparatus and methods comprise an algorithm for removing 5 an unknown narrow-band interferer from a communications signal of interest, so that the desired signal may be lock on to. In implementing the cancellation apparatus and methods, the received signal is oversampled either in time or in space. This oversampled signal contains a statistically white component (the signal of interest) and a correlated component (the narrow-band interferer). A prediction-error filter is formed 10 using correlation statistics of the oversampled signal. Filtering the oversampled signal produces an output that is statistically white, containing most of the signal of interest, and a small portion of the interference. The output of the prediction-error filter contains a sufficient facsimile of the desired signal to allow an adaptive decision-feedback equalizer to lock on to the signal by making correct decisions on the output data stream.